



**RESEARCH DEPARTMENT**

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# **Transmitting aerial for the Ballachulish television station**

**REPORT No. E-089**

**1963/31**

**THE BRITISH BROADCASTING CORPORATION  
ENGINEERING DIVISION**

RESEARCH DEPARTMENT

**TRANSMITTING AERIAL FOR THE BALLACHULISH  
TELEVISION STATION**

Report No. E-089

(1963/31)

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## TRANSMITTING AERIAL FOR THE BALLACHULISH TELEVISION STATION

### SUMMARY OF INSTALLATION

Site: The site is at Craigrannoch, 0.5 mile (0.8 km) east of Ballachulish Ferry, grid ref: NN/059593, height 50 ft (15 m) a.m.s.l.

Support Structure: The support structure consists of a 120 ft (37 m) square-section self-supporting tower, with provision for the addition of a 15 ft (4.6 m) cantilever topmast if required later for a Band II aerial. The tower is oriented with one side on a bearing of 30° ETN.

General Arrangement: See Fig. 1.

Channel: Channel 2, with vertical polarization, is used. Both vision and sound carriers are offset +16.875 kc/s.

Aerial: The aerial consists of a single vertical dipole mounted at a height of 110 ft (34 m) a.g.l. on a bearing of 30° ETN and spaced 5 ft 3 in (1.6 m) from the axis of the tower. The side dimension at this height is 1 ft 3 in (0.38 m).

Power: A single 100 W translator-amplifier is used.

Templet and Horizontal Radiation Pattern (h.r.p.): See Fig. 2 and Note 1.

Gain:

|                                              |            |           |
|----------------------------------------------|------------|-----------|
| Mean intrinsic and net gain                  | 0          | dB        |
| <u>Deduct:</u> loss in feeder (type RPC2603) | 1.2        | dB        |
| network loss                                 | 0.6        | dB        |
|                                              | <u>1.8</u> | <u>dB</u> |
| Mean effective gain                          | -1.8       | dB        |

Programme Link:

The Channel 5 H transmission from Fort William is received at Ardgour House and fed to Ballachulish by a microwave link.

Note:

1. The aerial design was based on a theoretical prediction of the h.r.p. assuming a cylindrical support mast electrically equivalent to the square tower section. This approximation gives reasonable accuracy in view of the small electrical size of the cross-section ( $0.066\lambda$  square). An experimental check of the h.r.p. was therefore unnecessary.

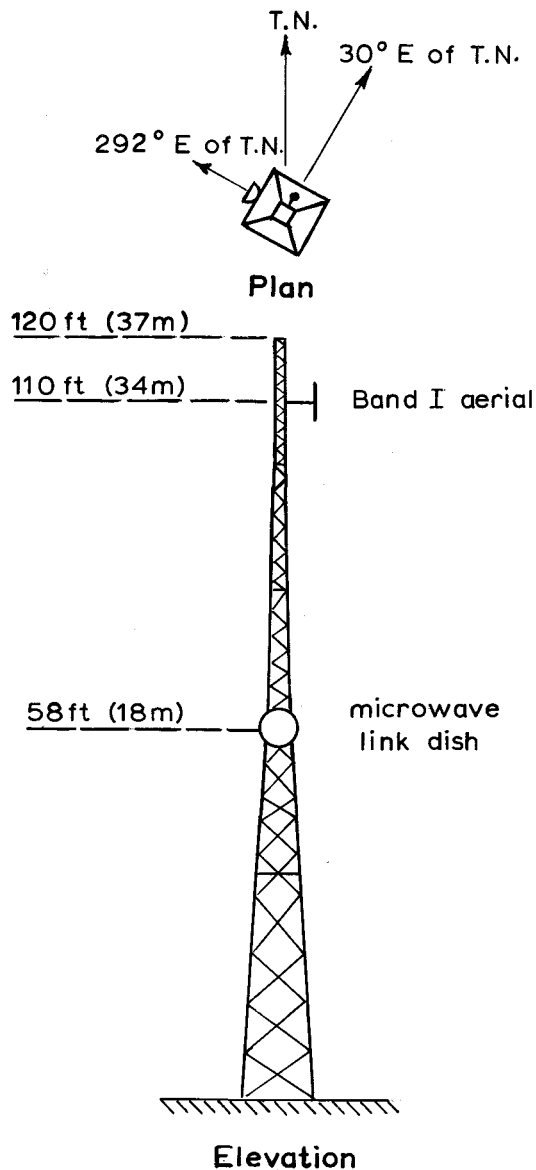


Fig.1 General arrangement of aerials on tower

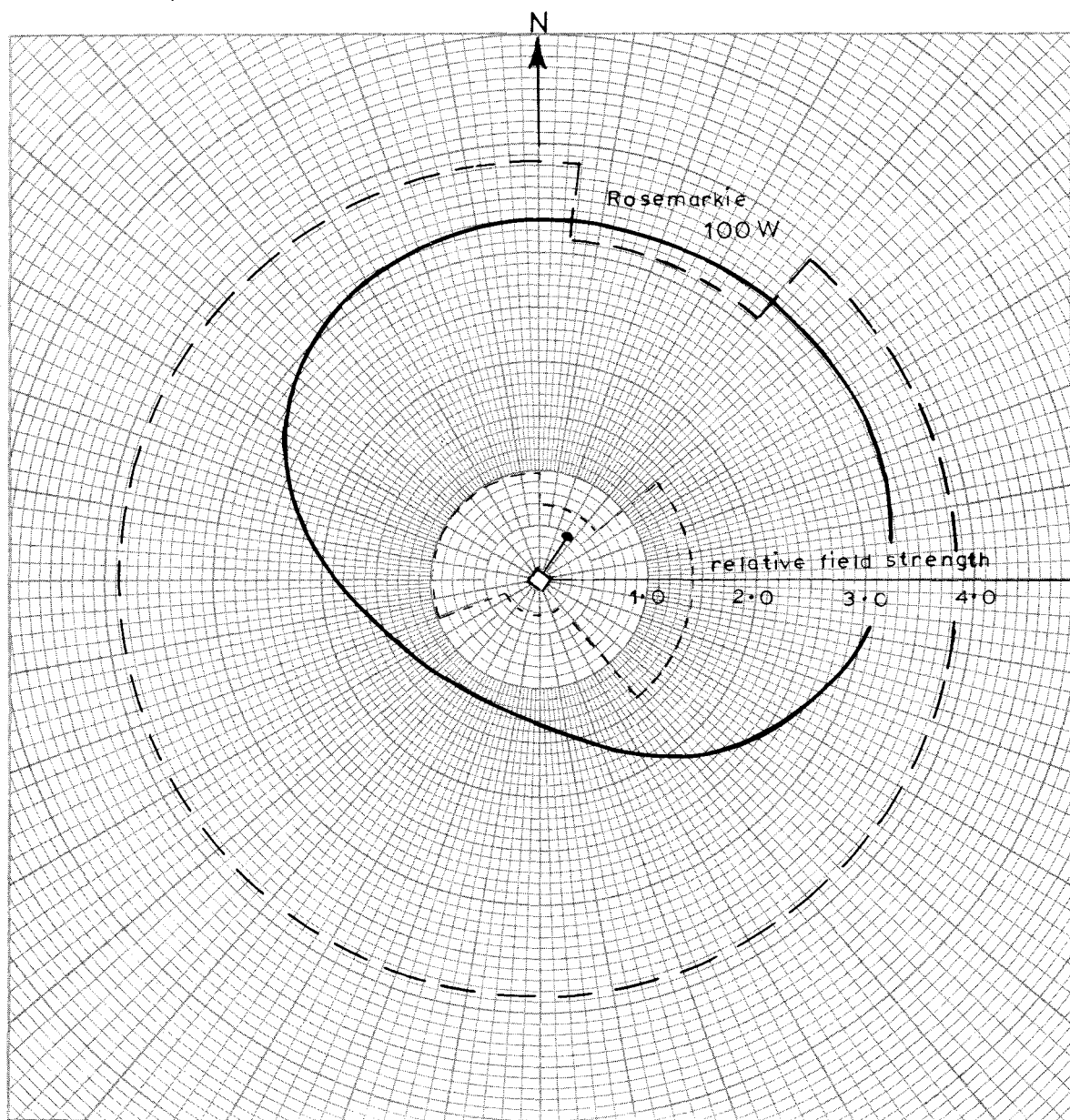


Fig.2 Templet and horizontal radiation pattern  
CHANNEL 2 (Vision carrier 51.75 Mc/s Sound carrier 48.25 Mc/s)

VERTICAL POLARIZATION

Mean effective gain  $-1.8$  dB      — — — Maximum permissible E.R.P.  
Transmitter power 100W      - - - - Minimum desirable E.R.P.  
Mean E.R.P. 66W

Unit field corresponds to an E.R.P. of 10W

